## PEER REVIEW HISTORY



## ARTICLE DETAILS

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| **TITLE (PROVISIONAL)** | An educational approach to improve outcomes in Acute Kidney Injury (AKI): Report of a quality improvement project. |
| **AUTHORS** | Xu, Gang; Baines, Richard; Westacott, Rachel; Selby, Nick; Carr, Sue |

## VERSION 1 - REVIEW

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| **REVIEWER** | Li Zuo<br>Renal Department, Peking University People's Hospital, Beijing, 100044, PR China |
| **REVIEW RETURNED** | 21-Dec-2013 |

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| **GENERAL COMMENTS** | The authors did a work to improve the AKI awareness in medical staff members. After one year staff member education, they surely increased something. But there were some major concerns:<br>(1) It could be expected that after education things will change. But the major confounding was that the foundation 1 or 2 year doctors will gain their own experience even if there is no AKI education. So, the author should design a control group without AKI training.<br>(2) If awareness of AKI was increased, it was expected that there was should some increase in incidence of AKI after education. So the incidence of AKI pre- and post- education program should be reported. Actually, the authors analyzed data within defined AKI patients.<br>(3) Definition of AKI in this study was not clear.<br>(4) Characteristics of participants were not clear.<br>(5) Pre- education questionnaire distributed to 319 participants, only 148 (46.4%) post-education questionnaire. This will cause great bias.<br>(6) Result did not answer the question: if education increased awareness of AKI. |

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| **REVIEWER** | Mark Thomas<br>Birmingham Heartlands Hospital<br>Birmingham<br>B9 5SS |
| **REVIEW RETURNED** | 08-Jan-2014 |

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| **GENERAL COMMENTS** | There are certain clarifications which would assist the reader:<br>1. AKI education - were extra education sessions added in amongst the 17 sessions over 12 months? How many are now delivered routinely per year in each Trust? This is important as this aspect was more sustainable than ad hoc ward based face-to-face teaching.<br>2. Make clear that Turning Point records live responses with digital keypads within a session. |

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| | 3. I presume the MCQs were best of five format - state this within the text.<br>4. Page 11, line 27, suggest results quoted as mean (SD), rather than use abbreviation 'M'.<br>5. Paragraph on F1 and F2s needs clarification - state which result refers to which group - i.e. F1 post intervention vs F2 pre intervention. Line 43 doesn't make sense... increasing awareness of 18.8% versus 69.5%. Should it not state mean 69.5% (F1s post) versus 18.8% (F2s pre)?<br>6. Audit - state auditors not blind to study, but end points were hard, thus diminishing risk of bias.<br>7. Web based learning - is it still in use? - please state.<br>8. p 15, line 35, sentence starting 'Our findings...' please break up, it is too long.<br>9. p 16, line 38: 'face-to-face' correct spelling<br>10. p 16, line 46, randomised in UK is spelled with an s.<br>11. The results in the two Trusts were different, make the obvious point that this is common to quality improvement projects. Are there any other explanations - more educational sessions at one Trust vs other, more use of web based learning?<br>12. Methods - state how the web based learning was accessed? Virtual learning environment? Certain PCs??<br>13. Rather than using the term e-learning resource and a one off abbreviation I would suggest using one of the two abbreviations used in the Medical Eduation literature - either web based learning (WBL) or technology enhanced learning (TEL). Readers will recognise the latter more readily. |

**VERSION 1 – AUTHOR RESPONSE**

Reviewer 1: Li Zuo

The authors did a work to improve the AKI awareness in medical staff members. After one year staff member education, they surely increased something. But there were some major concerns:

(1) It could be expected that after education things will change. But the major confounding was that the foundation 1 or 2 year doctors will gain their own experience even if there is no AKI education. So, the author should design a control group without AKI training.

As described in paragraph 2 of the Discussion (page 13) the project was conducted as a quality improvement project rather than a randomized controlled trial. The aim was to assess the impact of a novel educational program upon the knowledge and confidence of doctors working in the 2 hospitals when dealing with AKI patients.The project title has been amended to reflect this . In a real NHS clinical setting it would be impossible to expose one group of doctors to the educational intervention and maintain a naïve control group (as a result of on call rotas, medical cross-cover arrangements on the wards, easy accessibility of e-learning to all doctors, sharing of information between about educational resources between doctors etc). In addition, this could raise ethical concerns if education were denied to a control group doctors caring for AKI patients within the same hospitals. In light of the Editors and reviewers concerns the Discussion has also been amended to include a section on “Limitations” and this issue is discussed further (page 14-16).

(2) If awareness of AKI was increased, it was expected that there was should some increase in incidence of AKI after education. So the incidence of AKI pre- and post- education program should be reported. Actually, the authors analyzed data within defined AKI patients.

The diagnosis and incidence of AKI was defined by an automated electronic tool which is independent of clinicians input (page 7). The project did not aim to study the incidence of AKI but the awareness of AKI within the hospitals. The data on incidence of AKI before and after the intervention is available if required. However, the factors affecting the incidence of AKI are complex and dependent upon the number of patients presenting from the community with AKI and those who develop AKI when in hospital. The incidence is also impacted by other factors including patient demographics and seasonal variation. It would therefore be difficult to draw any robust conclusions from this data.

(3) Definition of AKI in this study was not clear.

The presence of AKI was defined by an existing automated electronic tool. The project did not aim to assess the impact of the intervention upon the incidence of AKI and therefore the definition of AKI used by the automated tool was not included in the paper.

(4) Characteristics of participants were not clear.

The grade/level of clinical experience of the participants in the project are described in the Methods section of the paper (p10 and Table 1). Further demographic characteristics (eg: sex/age/ethnicity etc) of the participating doctors are not normally considered to be discriminatory factors in the knowledge and performance of clinicians.

(5) Pre- education questionnaire distributed to 319 participants, only 148 (46.4%) post-education questionnaire. This will cause great bias.

This is a potential confounding factor and the potential for bias addressed in the Discussion and reflected in the Conclusions of the paper. Additional discussion has been added on this point (Page 13-14)

(6) Result did not answer the question: if education increased awareness of AKI.

We disagree with this comment and maintain that the findings described in the results and discussion of the paper demonstrates that following the educational intervention there was an increase in the awareness of AKI.

Reviewer 2: Mark Thomas

1. AKI education - were extra education sessions added in amongst the 17 sessions over 12 months? How many are now delivered routinely per year in each Trust? This is important as this aspect was more sustainable than ad hoc ward based face-to-face teaching.

The additional 17 sessions were delivered as part of the project. Since the end of the project, additional sessions on AKI have been incorporated into the hospitals routine education program. This includes regular teaching sessions of AKI for foundation year 1, foundation year 2, and core medical trainee doctors on annual basis. Grand round presentation publishing AKI has also taken place annually since the end of the project, and the WBL is continue to be promoted. (Page 13)

2. Make clear that Turning Point records live responses with digital keypads within a session.

This has been clarified in the Methods section (page 8)

3. I presume the MCQs were best of five format - state this within the text

They were “best of five format” and this has been clarified in the Methods section (page 8).

4. Page 11, line 27, suggest results quoted as mean (SD), rather than use abbreviation 'M'.

This has been amended.

5. Paragraph on F1 and F2s needs clarification - state which result refers to which group - i.e. F1 post intervention vs F2 pre intervention. Line 43 doesn't make sense... increasing awareness of 18.8% versus 69.5%. Should it not state mean 69.5% (F1s post) versus 18.8% (F2s pre)?

This is been clarified and has been amended (Page 10-11).

6. Audit - state auditors not blind to study, but end points were hard, thus diminishing risk of bias.

This has been clarified (page 14).

7. Web based learning - is it still in use? - please state.

Yes, the e-learning package is available to all hospital staff. It is available to access on www.euhl.nhs.uk.( Page 6).

Following the project the resource was well received following several National presentations and has been adopted by several other NHS trusts, and available to view athttp://www.uhl-library.nhs.uk/aki/: (Page 12).

8. p 15, line 35, sentence starting 'Our findings...' please break up, it is too long.

This sentenced has been improved (page 15)

9. p 16, line 38: 'face-to-face' correct spelling

This has been amended (page 16)

10. p 16, line 46, randomised in UK is spelled with an s.

This has been amended (page 17)

11. The results in the two Trusts were different, make the obvious point that this is common to quality improvement projects. Are there any other explanations - more educational sessions at one Trust vs other, more use of web based learning?

The educational intervention in the two trusts was slightly different due to the logistics of implementing the resources in two different trusts. The WBL was utilized more in UHL compared to RDH (page 15)

12. Methods - state how the web based learning was accessed? Virtual learning environment?Certain PCs?

The web based learning was designed to be accessible from all Trust computers. It was hosted in a closed virtual learning environment (eUHL website details www.euhl.nhs.uk.) in order to monitor usage. This has been clarified in the Methods section (Page 6).

13. Rather than using the term e-learning resource and a one off abbreviation I would suggest using one of the two abbreviations used in the Medical Education literature - either web based learning (WBL) or technology enhanced learning (TEL). Readers will recognise the latter more readily.

This is a valid point, this has been changed and the e-learning resource is now referred to throughout the paper as web based learning (WBL).